

MRI software and cognitive fusion biopsies in people with suspected prostate cancer: a systematic review, network meta-analysis and cost-effectiveness analysis

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Plain language summary

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Men with an magnetic resonance imaging scan that shows possible prostate cancer (PCa) are offered prostate biopsies, where samples of the prostate tissue are collected with a needle, to confirm the presence and severity of cancer. Different biopsy methods exist. In a cognitive fusion biopsy, clinicians will target abnormal looking parts of the prostate by looking at the magnetic resonance imaging scan alongside 'live' ultrasound images. During a software fusion (SF) biopsy, a computer software is used to overlay the magnetic resonance imaging scan onto the ultrasound image. This study evaluated whether SF is better at detecting cancer compared with cognitive fusion biopsy, and whether it represents value for money for the National Health Service.

We did a comprehensive review of the literature. We combined and re-analysed the evidence, and assessed its quality. We investigated whether SF biopsies are sufficient value for money.

Compared with cognitive fusion, patients receiving a SF biopsy may have: (1) a lower probability of having a 'no cancer' result, (2) similar probability of having a benign, non-clinically significant (CS) cancer result and (3) higher probability of detecting CS cancer. However, it is uncertain to what extent SF is more accurate than cognitive fusion, because of concerns about the quality of the evidence. We found no evidence that any SF devices were superior to others. Using additional, random biopsies alongside software or cognitive fusion would increase the detection of PCa.

We also looked for evidence on the value for money of the SF biopsies to detect PCa and found no relevant studies. We weighed the costs and the benefits of SF biopsy compared to cognitive fusion to determine whether it could be a good use of National Health Service money. The poor quality of information makes the value of the technologies largely unknown.

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This article

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